

Name: _____

Date: _____

s17 Geometric Series Exam (EXAM v368)

Question 1

Consider the partial geometric series represented below with first term $a = 990$, common ratio $r = \left(\frac{79}{99}\right)^{1/10}$, and $n = 10$ terms.

$$S = 990 + 967.91 + 946.31 + 925.19 + 904.55 + 884.36 + 864.63 + 845.34 + 826.47 + 808.03$$

We can multiply both sides by r .

$$rS = 967.91 + 946.31 + 925.19 + 904.55 + 884.36 + 864.63 + 845.34 + 826.47 + 808.03 + 790$$

What is the value of $S - rS$?

Question 2

Consider the geometric series shown below, using ellipsis notation to indicate a continuation of the pattern without writing every term.

$$S = 5 + 5(6) + 5(6)^2 + 5(6)^3 + \cdots + 5(6)^{84} + 5(6)^{85} + 5(6)^{86} + 5(6)^{87}$$

Identify the initial term, the common ratio, and the number of terms.

Question 3

Write a proof for the partial geometric series formula.

- a. Define the variables.
- b. Write the sum using variables and ellipsis notation. You can implicitly assume the number of terms is more than the number of terms you choose to write.
- c. Using annotated algebraic manipulation, produce the partial geometric series formula.